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EXAMINER

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/605,988
Filing Date: November 12, 2003
Appellant(s): WILKINSON, DANIEL J.

Daniel J. Wilkinson
For Appellant

MAILED

JUN 06 2007

GROUP 3600

EXAMINER'S ANSWER

This is in response to the appeal brief filed 3/5/07 appealing from the Office action mailed 8/28/06.

Art Unit: 3673

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

2,349,903	Fall	5-1944
2,323,815	London	7-1943
Re. 20,256	Wuerfel	1-1937

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims 1-3, 6-7 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Fall (US. 2,349,903).

Fall discloses a piston ring assembly (figure 4) for retention in a ring groove of a piston of an internal combustion engine. The piston ring assembly comprising an upper ring (10) for bearing against an upper surface of the piston ring groove, a lower ring (11) for bearing against a lower surface of the piston ring groove, a first shoulder recess (recess that retains the expander 18) about an inner periphery of the upper ring, a second shoulder recess (recess that retains the expander 18) about an inner periphery of the lower ring, a first portion of the upper ring is in contact with a corresponding first portion of the lower ring (where upper ring and lower ring 10 and 11 contact each other, see figure 4), a generally sinusoidal expander (18) having alternating apexes (apexes 15b of the expander 18 not showed in figure 4 but showed as example in figure 1), the generally sinusoidal expander received in a cavity formed by the first shoulder recess and the second shoulder recess and radial compression of the upper and lower rings induces axial expansion of the generally sinusoidal expander (this is the case since the upper ring, the lower ring and the expander have the same structure as claimed by applicants, further more upper and lower rings and the expander are split rings) for urging the upper and lower rings against the upper and lower surface of the piston groove. The piston ring assembly is capable of being positioned within a ring groove (groove as seen in figure 4 that retains the piston ring assembly) of a piston such that the axial expansion of the expander urges the upper ring against the upper surface of the ring groove and the lower ring against a lower surface of the ring groove (this is

Art Unit: 3673

the case since the expander, the rings have the same structure as claimed by the applicant, intended use). The upper and lower rings have a lip (lip on outer surface of the upper and lower rings that have surface 10b and 11b). The apexes are generally flat and are supported by two adjacent leg members. The upper ring includes a first gap and the lower ring includes a second ring gap (the upper and lower rings are split rings). Fall teaches that the expansion of the expander in an axial direction as noted on page 1, lines 33-37 due to compression of the upper and lower rings. The radial thickness of the expander (expander has a radial thickness starting from inside of the cavity and extending to the piston, example is shown in figure 1) is greater than the radial thickness of the cavity.

2. Claims 4, 9-10, 12-13, 15-16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fall in view of Landon (US. 2,323,815).

Fall discloses the claimed invention except that the expander is generally sinusoidal having a set of upper apexes and a set of lower apexes, the upper apexes contact the second portion of the upper ring, the lower apexes contact the second portion of the lower ring, the ends of the expander forming a W-shape configuration and the apexes are supported by two adjacent leg members such that an angle defined by the adjacent leg members is about 16 degrees. Landon discloses a piston ring assembly having an upper ring and a lower ring, an expander between the upper ring and the lower ring, the expander being sinusoidal, where two upper apexes contact the upper ring and the two lower apexes contact the lower ring, ends of the expander forming a split configuration (gap between ends of the expander, figure 1), ends of the expander forming a W-shape configuration and the apexes are generally flat and are supported by two adjacent leg members such that an angle is defined by the adjacent legs members. It

Art Unit: 3673

would have been obvious to one having ordinary skill in the art at the time the invention was made to have the expander of Fall be replaced by the expander of Landon, to provide axial resilience for the expander, a substantial bearing area for the upper and lower rings and to minimize wear (page 1, lines 35-47 of Landon).

3. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fall and Landon.

Fall and Landon disclose the invention substantially as claimed above but fail to disclose that the angel being about 16 degrees. Discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Without the showing of some unexpected result. Since applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the angle to be about 16 degrees to provide a mechanical expedience.

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fall in view of Wuerfel (Re. 20,256).

Fall discloses the invention substantially as claimed above but fails to disclose that the upper and lower rings including plurality of projection on a mating inner surface to define a plurality of vents. Wuerfel discloses a piston ring assembly having an upper ring and lower rings, the upper ring and the lower rings having plurality of projection on a mating inner surface to define a plurality of vents (figure 1 or figure 5, where projections adjacent to 25 that form vent channels). It would have been obvious to one having ordinary skill in the art at the time the

Art Unit: 3673

invention was made to configure the upper and lower rings of Fall to have plurality of projection on a mating inner surface to form vents as taught by Wuerfel, to provide an oil control piston ring assembly and to provide drainage of excess oil (page 2, column 2, lines 6-7 of Wuerfel).

5. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fall and Landon as applied to claims above, and further in view of Wuerfel.

Fall and Landon disclose the invention substantially as claimed above but fail to disclose that the upper and lower rings including plurality of projection on a mating inner surface to define a plurality of vents. Wuerfel discloses a piston ring assembly having an upper ring and lower rings, the upper ring and the lower rings having plurality of projection on a mating inner surface to define a plurality of vents (figure 1 or figure 5, where projections adjacent to 25 that form vent channels). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the upper and lower rings of Fall and Landon to have plurality of projection on a mating inner surface to form vents as taught by Wuerfel, to provide an oil control piston ring assembly and to provide drainage of excess oil (page 2, column 2, lines 6-7 of Wuerfel).

(10) Response to Argument

Response to Arguments for Claim 1:

Appellants' argument that Fall fails to teach radial compression of the rings induces axial expansion of the generally sinusoidal expander is not persuasive because this is not claimed in claim 1.

Appellants' argument that Fall fails to teach radial compression of the rings induces axial expansion of the expander as claimed in claim 1 is not persuasive because as pointed out in the

Appellants' argument that the only possible basis for the Examiner's assertion that Fall discloses the claimed expander is that Fall somehow inherently discloses an axial expanding expander ring is not persuasive because as shown in figure 1 of Fall and stated on page 1,

Art Unit: 3673

column 23, lines 33-37 by way of example that the expander ring expands in a manner as stated by applicant in specification paragraph 0021 (The radial compression of the upper and lower rings 12, 14 induces axial expansion of the expander 22, causing the two generally parallel ends 47a, 47b defining the expander gap 42 to mate).

Appellants' argument on pages 7-8 are not persuasive because the expansion applicant is claiming which is stated on paragraph 0021, lines 7-16 is taught by Fall (see above figure 1 and Page 1, column 2, lines 33-37).

Appellants' argument that Fall fails to teach each and every element of the claims is not persuasive because as stated in the rejection above, each and every element is taught by Fall.

Response to Arguments for Claim 17:

Appellants' argument that Fall fails to teach radial thickness of the expander is not persuasive because the radial thickness of the expander has a radial thickness starting from inside of the cavity in rings 10 and 11 and extending to the piston 13, example is shown in figure 1.

Response to Arguments for Claim 4:

Appellants' argument that two ends defining an expander gap such that radial compression of the upper and lower rings matters the two ends is not persuasive in view of page 1, column 23, lines 33-37.

Response to Arguments for Claim 9:

Appellants' argument that Fall does not disclose the radial compression of the upper and lower rings induces axial expansion of the expander is not persuasive because as pointed out in the specification paragraph 0021, lines 7-16, "The radial compression of the upper and lower rings 12, 14 induces axial expansion of the expander 22, causing the two generally parallel ends

Art Unit: 3673

47a, 47b defining the expander gap 42 to mate”, this is what is taught by Fall as shown in figure 1 below. Page 1, column 2, lines 33-37, “The ring 15 is split at 15c in order that it may expand and contract as required by the ring segments 10 and 11 and the cylinder 14 in which the piston ring assembly is being used.

Appellants’ argument that London fails to disclose that the radial compression of the upper and lower rings induces axial expansion of the expander is not persuasive because this is taught by Fall (see above paragraph).

Appellants’ argument that the expander of London would not provide radial pressure that Fall requires is not persuasive because the radial pressure is provided due to the fact that the expander is split. Furthermore the reference of London is used to teach that the expander to have apexes that contact the upper and lower rings and being a generally sinusoidal expander.

Appellants’ argument that teaching of London would make the Fall invention inoperable is not persuasive because London is used to teach that the expander to have apexes that contact the upper and lower rings and being a generally sinusoidal expander to provide axial resilience for the expander and a substantially bearing area of the upper and lower rings to minimize wear.

Appellants’ argument of selective combination is not persuasive because London is used to teach that the expander to have apexes that contact the upper and lower rings and being a generally sinusoidal expander to provide axial resilience for the expander and a substantially bearing area of the upper and lower rings to minimize wear.

Response to Arguments for Claims 5, 11, 8 and 14:

Appellants’ argument that claims 5, 11, 8 and 14 are patentable based on their dependency from a patentable base claim is not persuasive because claims 1 and 9 are rejected.

Art Unit: 3673

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Art Unit: 3673

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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